2007 Census of Technology Report

"Making a Positive Difference through Education and Service"
Dr. D. Kent King, Commissioner

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I. Introduction

The Census of Technology (COT) is designed to assess Missouri's continuing investment in K-12 education technologies and to help guide forward efforts. It provides important data for the Department of Elementary and Secondary Education (DESE) to share with state and national decision-makers to increase public awareness and advance public policy and support for education technology. It provides local school districts with data to help identify needs and develop strategies to facilitate school improvement processes and compare district progress with statewide data. The COT is aligned with the *Missouri Education Technology Strategic Plan* (METSP) and is a primary data source for measuring progress toward meeting the state goals and objectives. A cross reference of COT items and METSP goals and objectives is provided as an appendix to this report.

A technology survey has been collected annually since 1997. Prior to 2001, DESE contracted with the University of Missouri's Office of Social and Economic Data Analysis to administer the project. In 2001, the census was incorporated into the April cycle of DESE's online core data collection system. The 2001 COT was the first to be completed by all districts; data collected prior to 2001 were adjusted to estimate the entire population.

The COT has two parts: a district-level survey and a school building-level survey. The District Census assesses the levels of planning and training for the district as a whole and concentrates on hardware, software, and levels of connectivity for the administrative buildings and offices. Completed by district-level administrators and/or technology specialists, the District Census includes information for all Missouri school districts and charter LEAs.

The Building Census assesses planning and training needs for individual school buildings and focuses on hardware and levels of Internet connectivity in computer labs, libraries, and classrooms. Completed by building-level administrators or technology contacts, the Building COT collects data from preschools, elementary schools, middle schools, junior high schools, high schools, area career centers, and the majority of charter schools (those in operation at least one full year prior to the Census date). Exempted buildings include juvenile centers, special education cooperatives, buildings where attendance is reported at another building (such as a gifted center), or other buildings with no enrollment data.

This *2007 Census of Technology Report* arranges the 2007 data for both the district and building levels according to the following areas: technology planning, technology professional development, hardware and support, Internet connectivity-distance learning, technology usage, and technology funding. Where feasible and appropriate, this report presents and compares information from previous years. Aggregated responses for the district and building census forms are provided in the Appendix section of this report.

This report is one of several documents that examine the use and effectiveness of education technologies in Missouri. Other evaluation information can be found in the Missouri Education Technology Strategic Plan reports, eMINTS Program research reports, annual technology program reports, project descriptions, and annual evaluation narratives – all of which may be accessed from the Instructional Technology website at http://dese.mo.gov/divimprove/instrtech.

For additional information regarding the Census of Technology, contact the Instructional Technology section by telephone at 573-751-8247 or email at instrtech@dese.mo.gov.

II. Executive Summary

A. Overview

The Census of Technology continued to show modest gains in the past year. While modest, the gains represent consistent improvement in Missouri's schools with regards to technology readiness and use during the 2006-2007 school year. Despite another year afflicted with sluggish economies at the state and local levels and significant decreases in state funds (including another year of not funding the Technology Acquisition Grant Program), Missouri schools continued to improve access to education technologies for administrators, faculty, staff, and students and report increases in their quality uses of those technologies.
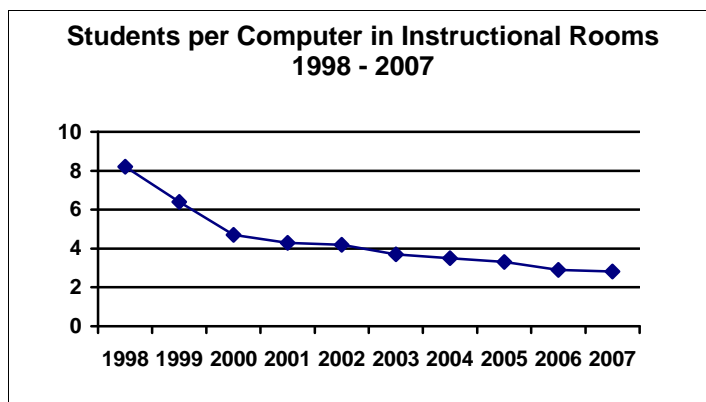
While advancements are slight, the 2007 data indicate that more schools are connected to one another and the Internet and more educational technologies are provided for teachers and students. Students, teachers, and administrators continue to become better skilled in using education technologies and, more importantly, continue to increase the frequency in which they use the technologies in meaningful ways.

INTERNET ACCESS
- Of the 2,218 school buildings reporting, 96 percent (2.185) have a partial T1 or higher Internet connection and 85 percent (1,879) have connectivity bandwidths greater than T1.

COMPUTER ACCESS
- Out of the 343,306 computers (includes handhelds) located across the buildings, 93 percent (319,455) are located in instructional rooms: 190,981 in classrooms, 101,752 in computer labs, and 26,722 in library media centers.
- The number of students per computer (all computers located across all buildings) is 2.61 (compared to 2.73 in 2006, 3.09 in 2005, 3.26 in 2004, 3.29 in 2003, and 3.8 in 2002 and 2001).
- The number of students per computer in all instructional rooms is 2.81 (compared to 2.94 in 2006, 3.3 in 2005, 3.48 in 2004, 3.66 in 2003, 4.21 in 2002, 4.34 in 2001, 4.65 in 2000, 6.4 in 1999, and 8.15 in 1998).
- The number of students per computer in classrooms is 4.70 (compared to 4.88 in 2006, 5.55 in 2005, 5.89 in 2004, and 6.42 in 2003).

Students per Computer in Instructional Rooms 1998 - 2007

> The number of students per computer in instructional rooms has decreased from 8.15 students in 1998 to 2.81 students in 2007.
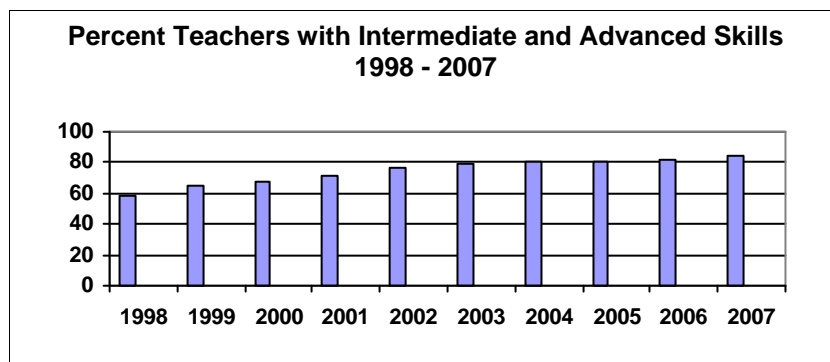
PRINCIPAL TECHNOLOGY SKILLS
- Approximately 93 percent of principals have intermediate and/or advanced technology skills (compared to 92 percent in 2006, 91 percent in 2005, 92 percent in 2004, 90 percent in 2003, and 82 percent in both 2002 and 2001).
- Schools report that 98 percent of the principals routinely use email (compared to 97% reported 2003 through 2006, 92 percent in 2002, and 74 percent in 2001).
- The rate of principals routinely conducting online research is 82 percent (compared to 81 percent in 2006, 79 percent in 2005, 80 percent in 2004, 79 percent in 2003, 69 percent in 2002, and 58 percent in 2001).

TEACHER TECHNOLOGY SKILLS
- Schools report that 79 percent of teachers routinely use educational software (compared to 76 percent in 2006, 78 percent in 2005 and 2004, 76 percent in 2003, 71 percent in 2002, and 59 percent in 2001).
- The rate of teachers routinely using technology for lesson plan preparation is 71 percent (compared to 68 percent in 2006, 66 percent in 2005 and 2004, 64 percent in 2003, 59 percent in 2002, and 45 percent in 2001).
- In 2007, 84 percent of teachers have intermediate and/or advanced technology skills (compared to 82 percent in 2006, 81 percent in 2005 and 2004, 79 percent in 2003, 76 percent in 2002, and 72 percent in 2001).

> The percent of teachers with intermediate and advanced technology skills has increased from 59 percent in 1998 to 84 percent in 2007.

Percent Teachers with Intermediate and Advanced Skills 1998 - 2007

STUDENT TECHNOLOGY SKILLS
- Schools report that 80 percent of students routinely use educational software (the same percent reported since 2003).
- Approximately 90 percent of eighth-grade students are technology literate (the same percent reported since 2005).

B. Bulleted List of 2007 Findings

TECHNOLOGY PLANNING
- All districts have state-approved technology plans
- 2,203 school buildings (99 percent) have building technology plans

TECHNOLOGY PROFESSIONAL DEVELOPMENT
- Over 90 percent of districts have board-approved education technology standards
  - 84 percent have locally developed standards
  - 42 percent have adopted the National Educational Technology Standards (a sizable jump from the 35 percent reported in 2006)
  - 92 percent have standards for middle school/junior high students (grades 6-8), 91 percent for students in grades 3-5, 88 percent for PreK-2 elementary students, and 77 percent for high school students (grades 9-12)

- 86 percent have standards for teachers, 84 percent for school administrators, and 75 percent for support services staff
- The percentages of staff with intermediate and/or advanced technology skills are:
    - 93 percent of school building administrators
    - 84 percent of teachers
    - 73 percent of school services staff
- Buildings report having over 1,600 eMINTS-trained teachers and over 100 individuals trained as eMINTS Education Technology Specialists

HARDWARE AND SUPPORT
- The median district provides 1.00 FTE for technical maintenance and support
    - School building technical support was most likely provided by district staff, followed by school certificated staff and other school staff
- School buildings provide access to 343,306 computers
    - 82 percent are PC or PC-compatible, 13 percent are Apple/Mac, and 4 percent are handheld computers
    - 93 percent of all computers are located in a classroom, computer lab, or library media center
- The typical time-frame for resolving technical problems and repairs is two-to-three working days

INTERNET CONNECTIVITY AND DISTANCE LEARNING
- 91 percent of the districts have district-managed networks that connect all district buildings
- Most district networks support:
    - accounting/payroll – 99 percent of districts
    - student attendance – 95 percent of districts
    - library catalog – 93 percent of districts
    - email/communications and library catalog – 94 percent of districts
    - food service – 87 percent of districts
    - discipline reports – 85 percent of districts
- 96 percent of the school buildings have a partial T1 or higher Internet connection
- Buildings support distance learning systems
    - cable television – 1,175 buildings
    - interactive television – 419 buildings
    - satellite reception – 351 buildings
    - desktop videoconferencing – 307 buildings

TECHNOLOGY USAGE
- 99 percent of districts report having technology integrated into one or more core content curriculum:
    - 98 percent – communications arts
    - 95 percent – science
    - 93 percent – mathematics
    - 93 percent – social studies
- Almost all districts (97%) provide email accounts to staff:
    - 97 percent – school administrators
    - 96 percent – teachers
    - 93 percent – other district staff

- Fewer numbers of districts provide email accounts to students:
    - 118 – high school students
    - 57 – middle school students
    - 31 – students in grades 3-5
    - 10 – students in PreK-2
- Buildings report the following routine use of technology, by application and user type:

Application	Administrators	Teachers	Students
Educational software	47%	79%	80%
Email	98%	96%	13%
Electronic Resources:			
EBSCO host	17%	24%	23%
Electronic encyclopedia	16%	32%	36%
Newsbank	8%	12%	11%

- Buildings estimate the following routine use of technology, by function and user type:

Function	Administrators	Teachers	Students
Produce media, web, or multimedia products	61%	59%	46%
Produce written or print products or presentations	82%	82%	61%
Communicate with peers, experts, others	95%	90%	24%
Communicate with parents and students	86%	78%	24%
Conduct online research	82%	77%	58%
Participate in online courses (this year)	12%	14%	4%
Manage student records	87%	81%	NA
Track student performance	85%	82%	NA
Assess student performance	76%	78%	NA
Deliver and present instruction	41%	67%	NA
Prepare lesson plan(s)	14%	71%	NA

- Leadership and support of teachers in integrating technology is provided by:
    - library media specialist – 61 percent of buildings
    - teacher – 52 percent of buildings
    - school administrator – 50 percent of buildings
    - district technology staff – 44 percent of buildings
    - instructional technology specialist – 37 percent of buildings
- The median building reports that 60 percent of the teaching staff fully integrates technology into the curriculum.
- Almost all buildings have one or more technology-mediated feedback systems:
    - email – 2,110 buildings – 95 percent
    - voice mail – 1,265 buildings – 57 percent
    - automated absentee calling systems – 511 buildings – 23 percent
    - listserv – 396 buildings – 18 percent
    - homework hotlines via the web – 353 buildings – 16 percent
    - homework hotlines via the telephone – 277 buildings – 12 percent

TECHNOLOGY FUNDING
- Districts projected spending $135.7 million in 2006-07 for technology-related activities and purchases.

III. Detailed Findings

This section of the *2007 Census of Technology Report* details all of the district- and building-level data, compares current data with previous years' data, and makes note of trends and/or anomalies found in data from the last several years.

A. District Census

All 524 Missouri school districts and 16 charter LEAs completed the COT in 2007. The District Census is a quick survey, comprised of 11 items that address technology planning, standards, administrative systems and support, and budgeting. See Appendix A for copies of the district and school building surveys, completed with aggregated data, and Appendix B for a cross reference of COT items and Missouri Education Technology Strategic Plan (METSP) goals and objectives.

Even with the continued loss of state funding (i.e., the Technology Acquisition Grant or TAG program), district responses to the 2007 COT indicate continued progress in technology readiness and use. Missouri districts appear to be making effective use of technology for administrative purposes, managing networks and systems that help improve district administration, data management, and communication.

TECHNOLOGY PLANNING
The district-level COT examines the presence of a board-approved and state-approved long-range education technology plan. A school district's long-range technology plan provides a road map for how the district will implement strategies that promote the district's mission, advance its comprehensive school improvement plan, and improve teaching and learning through the use of education technologies. DESE began approving technology plans in 1997 as a requirement for the E-rate program. Beginning in 1999, a state-approved technology plan became a requirement for participation in the state's technology grant programs and the MOREnet Technology Network Program. With the passing of the federal No Child Left Behind Act in 2001, DESE developed the 2002-2006 Missouri Education Technology Strategic Plan and updated accordingly the scoring criteria used to approve district education technology plans.

Early district technology plans dealt mostly with hardware and equipment and did little to address integration, student learning, or technology professional development. Now plans are much more comprehensive, as a result of the state plan and the scoring criteria for local plans both focusing on the development of plans that align with comprehensive school improvement plans and promote effective teaching strategies, student achievement, and adequate infrastructure and technical support.

Item 1 – State-approved technology plans
All districts have state-approved district technology plans. All district plans are approved using the scoring guide developed in 2002 in response to the No Child Left Behind Act and the 2002-06 Missouri state plan.

TECHNOLOGY PROFESSIONAL DEVELOPMENT
Professional development is a critical factor in teachers using technology in meaningful and effective ways. In November of 1997, the State Board of Education established policy that required buildings to allocate amounts equal to 20 percent of state technology grant funds for technology-related training. The policy went into effect for the 1998-1999 school year. The Title II.D (Ed Tech) Program, begun in 2002-2003, requires that 25 percent of formula and/or competitive grant funds be earmarked for professional development.

Data collected over the previous years indicate that teachers are increasingly interested in professional development sessions that address how to integrate technology into curriculum and instructional teaching strategies. Professional development is most effective when tied to comprehensive school improvement plans and to local, state, and national educational technology standards. The Missouri technology plan endorses the National Educational Technology Standards (NETS) for students, teachers, and school administrators developed by the International Society for Technology in Education (ISTE).
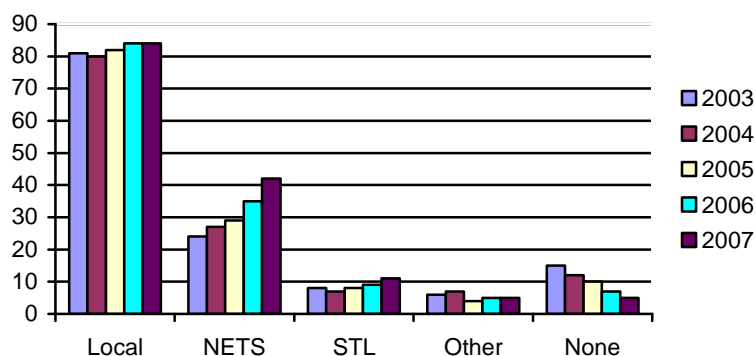
Item 2 – Educational technology standards
Added to COT in 2003, item two asked about the educational technology standards in place in the district. Standards provide guidelines for developing curriculum and guiding teacher and student behavior; they define a common agreement on what ought to be taught or learned. Also, educational technology standards serve as guidelines for planning technology-based activities in which students achieve success in learning communication and life skills.

In 2007, the vast majority of districts report having board-approved educational technology standards. Figure 1 shows that 84 percent (454) districts have standards developed by the district, 42 percent (228) have adopted the National Educational Technology Standards, and 11 percent (62) have adopted the Standards for Technological Literacy (STL) endorsed by the International Technology Education Association (ITEA). Twenty-eight districts report having other standards, while 29 districts (5 percent) report having no board-approved standards. The 2007 data closely parallel the data collected 2003 through 2006, but also show a modest increase in the number of districts adopting the NETS (as proposed in the state plan) and a decrease in the number of districts having no board-approved standards. Many of those districts adopting the NETS also incorporate locally developed standards.
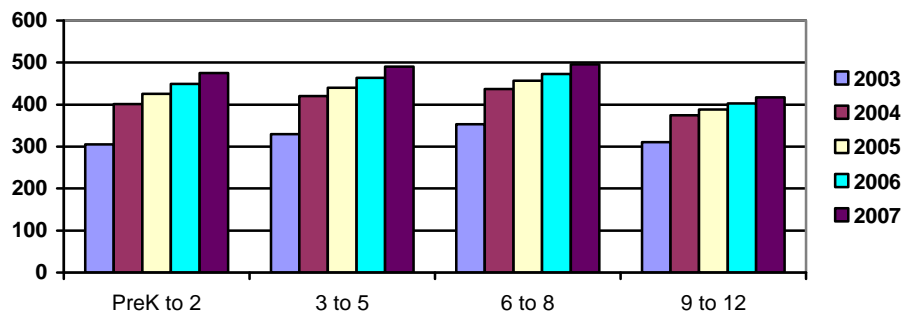
Figure 1

Percent Districts with Education Technology Standards, by Standard Type, 2003 - 2007

Over ninety percent of districts reported having technology standards for students: 88 percent (475 districts) have established standards for PreK-2 students, 91 percent (490) have standards for students in grades 3-5, 92 percent (496) have standards for middle school students, grades 6-8, and 77 percent (417) have standards for high school students. One hundred percent of districts that house area career centers also indicate having standards for career center students. The number of districts with established technology standards has increased for all grade levels each year since 2003, as indicated in Figure 2.
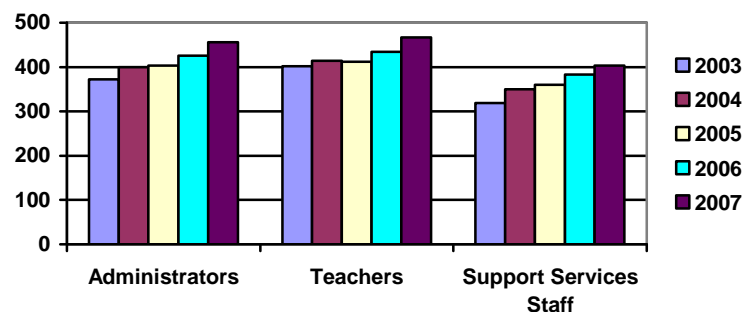
Figure 2

**Number Districts with Student Technology Standards,
by Grade Spans, 2003 - 2007**

Almost nine of ten districts (87 percent) report having technology standards for district employees: 86 percent (467 districts) have standards for teachers, 84 percent (456) have standards for administrators, and 75 percent (403) have standards for support services staff. Similar to the status of student standards, the number of districts that report having educational technology standards for school employees has increased from 2003 to 2007, as illustrated in Figure 3 below.

Figure 3

**Number Districts with Technology Standards for Faculty/Staff,
by Employee Type, 2003 - 2007**

HARDWARE AND SUPPORT
Technology integration is affected by the kinds of hardware and software that districts deploy. The district COT looks at who is responsible for technology hardware and support in the district, the administrative technologies in place in the district, and computer networking. Access to current technologies is an essential condition for district operations as well as for teaching and learning. Technology is essential to effective and efficient district administration, data management, and communications. Having district technology staff – to help plan, purchase, install, and support district technologies – is key.

Item 3 – District technology staff
Item three asked districts to estimate the total number of district-level, full-time equivalent (FTE) staff responsible for technical maintenance and support. The typical (median) district has one full-time staff. Only 7 percent of districts in 2007 reported having no staff dedicated to overseeing district hardware and support, which is comparable to the 2006 rate.

Item 4 – District-supported administrative systems
Added in 2004, item four examines district administrative systems – programs that are used to expedite the storage and use of data and information. Table 4 details the systems supported by a majority of the districts. Almost all districts have accounting systems and support automated student attendance, electronic mail (email), and library catalog. However, fewer than half of the districts report having systems that support school safety, teacher evaluation, instructional management, human resources, extracurricular scheduling, and distance education, although all these showed slight growth since 2006.

Table 4

District Administrative Systems, 2004 - 2007

| | Number of Districts | | | |
System Type	2004	2005	2006	2007
Accounting/budgeting/payroll	511	513	517	532
Student attendance	461	488	498	512
Communication/email	452	478	489	507
Food service	431	420	451	470
Library catalog	432	475	491	504
Discipline	355	402	420	458
Health service	346	374	402	421
IEP management	345	382	401	427
Student performance	304	341	365	379

Item 5 – District networks
The use of an interconnected system of computers and peripheral equipment enables connected users to communicate and share information and resources. Revised in 2005, item five assumes that districts have computer networks and asks how many districts have all buildings in the district connected through a district wide (WAN) or local area (LAN) network. In 2007, 91 percent of districts report having all buildings connected, which is comparable to 2006 data and higher than the 87 percent reported in 2005.
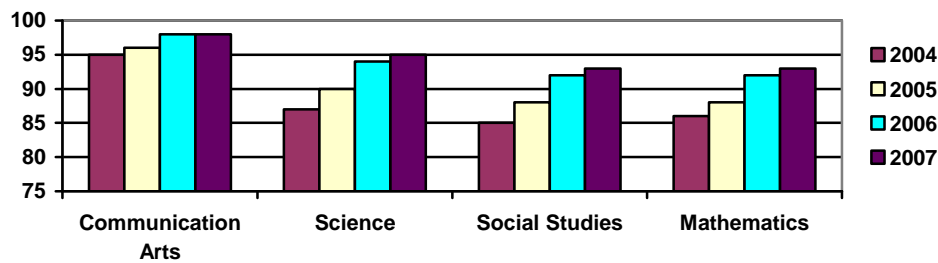
TECHNOLOGY USAGE
Previous items examined technology readiness, with integrating technology as the goal of making technology available and accessible. Technology usage items look at technology integration, the incorporation of technology resources and technology-based practices into daily routine – of districts, school employees, teachers, and students. At the district level, technology usage items check to see how districts support a culture that embraces technology and accepts technology as natural to the business of everyday work. Major goals of the Title II.D Program call for all districts to have technology integrated into core curricula and for students to be technology literate by the end of the eighth grade.

Item 6 – Curriculum integration
Technology integration in Missouri is defined as "written curriculum that incorporates content and processes (teaching, professional development, and assessment) related to technology resources, equity of resources, research and workplace readiness skills. Technology supports overall goals and objectives and makes possible and enhances the use of multiple instructional resources and teaching strategies (e.g., use of project-based learning, collaborative and cooperative learning, ongoing questioning, expert assistance, and critical analysis)." As depicted in Figure 5, at least 93 percent of districts report technology is integrated in the four core content areas: communication arts at 98 percent (531 districts), science at 95 percent (512), and 93 percent for mathematics (504) and social studies (403).

Figure 5

**Percent Districts with Technology Integrated in Curriculum,
by Subject, 2004 - 2007**

In 2004, the state upgraded the definitions and/or standards related to technology integration, student technology literacy, and teacher technology integration skills in order to better align with national standards (NETS). The dip noted in 2004 of the percentages of districts reporting to have technology integrated in the core curriculum areas is a reflection of the revised definition for integration. The increases for 2005 through 2007, therefore, indicate more than just modest improvement.

Item 7– District-provided email
Districts, for item 7, indicate the percentage of employees (by type) and students (by grade-level spans) who are provided email accounts. Table 6 shows that nearly all (97 percent) districts provide email accounts to employees, but less than one-fourth of districts provide accounts to students. Districts that do provide staff email accounts, however, typically provide accounts for all administrators, teachers, and support staff.

Table 6

Number Districts with Email Accounts, by Account/User Type, 2003 - 2007

Population	2003	2004	2005	2006	2007
District Employees					
• School administrators	504	515	502	508	522
• Teachers	499	510	495	498	518
• Support services staff	477	494	472	482	503
Students					
• Pre K-2	31	22	13	9	10
• 3-5	58	51	33	31	31
• 6-8	81	72	51	54	57
• 9-12	108	125	108	111	118

Item 8 – Technology literacy
In 1997, COT began asking districts to estimate the percentage of sixth-grade students who are computer literate, a goal set forth by Governor Mel Carnahan in January of 1997. In 2004, the item was revised to address "technology literacy" rather than "basic computer skills" and revised again in 2005 to address eighth-grade students. These revisions better align the COT item with the Title II.D technology literacy goal.

Since 2005, the typical (median) district has reported 90 percent of eighth-grade students as meeting the technology literacy standard as established by the state: "the ability to use appropriate technologies to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning and acquire lifelong knowledge and skills." Aligned to the NETS for students, literate students should be able to apply strategies for

identifying and solving routine hardware and software problems that occur during everyday use; exhibit legal and ethical behaviors when using information and technology; use content-specific tools, software, and simulations to support learning and research; design, develop, publish, and present products using technology resources that demonstrate and communicate curriculum concepts, and select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems.

TECHNOLOGY FUNDING
Districts are asked about their technology funding habits to study budget trends with regards to how much districts spend on technology and how districts make use of the national E-rate program.

Item 9 – Technology budgets
Revised in 2005, this item simply asks for the total amount budgeted for technology for the current year. As noted in Table 7, districts estimated spending nearly $135.8 million during the 2006-2007 school year, an average of $251,414 per district. Note that the 2007 total represents 540 districts and charter LEAs, while previous years represented only the 524 districts. Also, the average amount is inflated by the number of larger schools with access to greater resources. The typical (median) district reported a technology budget of only $50,000, the same as reported in 2006.

Table 7

District Technology Budgets and Expenditures, 2005 - 2007

	FY05	FY06	FY07
Technology Budget Items (in millions)	$105.861	$110.929	$135.763

Items 10 and 11 – E-rate discounts
Item 10 asked districts if they participated in the Universal Service Fund's E-rate program for 2006-2007 and the estimated amount of discounts/savings, while item 11 asked what percent of the discount received by the E-rate program is used to support education technology activities and expenditures. Note: While MOREnet files an E-rate application on behalf of the 510-plus districts and state schools that participate in the statewide network project (TNP), items 10 and 11 refer to district-filed applications for E-rate discounts.

In 2007, almost three in four districts received E-rate funding commitment decision letters, totaling nearly $26 million. The amounts ranged from under $100 to over $12 million, with the state averaging $64,585 per district. The median district reported receiving $10,610 and being able to spend 50 percent of this amount to support education technology. Table 8 compares the 2007 statistics with E-rate data reported 2003 through 2006. Note that the 2007 statistics are influenced by the inclusion of the charter LEAs and the E-rate 2-in-5 rule that went into effect for Funding Year 2005 and which restricts some district participation in the program – eligible entities are only able to receive support for Internal Connections in two of every five funding years.

Table 8

District E-rate Participation, 2002 - 2007

	02-03	03-04	04-05	05-06	06-07
Number districts applying	374	381	414	404	399
Percent districts	71%	74%	79%	77%	74%
Discounts received (reported in millions)	$41.0	$32.5	$29.7	$25.3	$25.7

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B. School Building Census

This section of the *2007 Census of Technology Report* analyzes data from 2,218 buildings compared to 2,229 buildings in 2006, 2,211 buildings in 2005, 2,207 buildings in 2004, and 2,250 buildings in 2003. While all buildings in the state complete the School Building Census Form, the report only covers those buildings with regular student populations. Data from juvenile centers, special education cooperatives, and other buildings (such as a gifted center) where attendance is reported at another building are not included in this report.

The school census is comprised of 18 items that are aligned to the Missouri State Education Technology Strategic Plan (METSP) and its five technology focus areas. Items examine access and distribution of the building's technology resources, technical support, teacher and student technical skills, and the routine uses of technology by user and technology type or function. A copy of the survey with aggregated data is provided as Appendix A, and Appendix B provides a cross reference of COT items and METSP goals and objectives.

Overall, the 2007 data indicate some continued improvements in the kinds and numbers of technologies that can be accessed in Missouri's school attendance centers as well as in the ways school administrators, teachers, and students are using those technology resources. A good number of the gains are modest, at best, and likely a result of the tight budget year as explained earlier in this report. Some of the differences (or the magnitude of differences) noted in data from 2003 to 2007 can likely be attributed to the setting of higher standards (i.e., the changes in definitions for technology literacy and full integration) as described earlier, and to the change in reporting only buildings with regular student attendance. This is not to say there are not areas that show more noteworthy increases.

TECHNOLOGY PLANNING
As with the district COT, the building census examines the presence of a long-range technology plan. A school building plan, like a district plan, should provide a road map to help the school implement strategies that promote the district's mission, advance district and building improvement plans, and improve the teaching and learning occurring in the building.

Planning Item 1 – Building technology plans
Building contacts are asked if buildings have technology plans and, if so, whether they are stand-alone plans and/or are embedded in district plans. Table 9 indicates the percentage of school buildings that have technology plans, the percentage of building plans that serve as stand-alone plans, and the percentage of plans that are included in district plans. Data show a continued trend in buildings having technology plans, starting with only 69 percent of buildings having plans in 2000 to 99 percent having plans in 2007.

Table 9

Status of Building Technology Plans, 2000 - 2007

	2000	2001	2002	2003	2004	2005	2006	2007
Building has a technology plan	83%	83%	83%	95%	97%	98%	99%	99%
Plan is in district tech plan	96%	96%	96%	88%	89%	92%	91%	91%
Building has stand-alone plan	N	N	N	6%	7%	6%	7%	8%

TECHNOLOGY PROFESSIONAL DEVELOPMENT
The use of technology in the school setting requires professional development aimed at helping educators integrate the appropriate education technologies into curriculum content, instructional teaching strategies, and the day-to-day business of teaching and learning. Teachers,

administrators, and school services staff need regular, ongoing, and quality professional development that helps them gain the confidence and skills needed in using the school's technologies in ways that promote district and school improvement plans and align with Show-Me Standards, board-approved curriculum, and board-approved educational technology standards.

Training Item 1 – Technology skills of building staffs
Building contacts are asked to estimate the technology-related skill levels of principals, teachers, technology support staff, and support services staff. The skill level options are:

> *Beginner* – basic technical skills including applications such as word-processing, some stand-alone software, and some Internet usage (email)

> *Intermediate* – regular use of applications, software, and Internet resources for increased productivity and the use of applications including word-processor for student writing, research on the Internet, computer-generated presentations
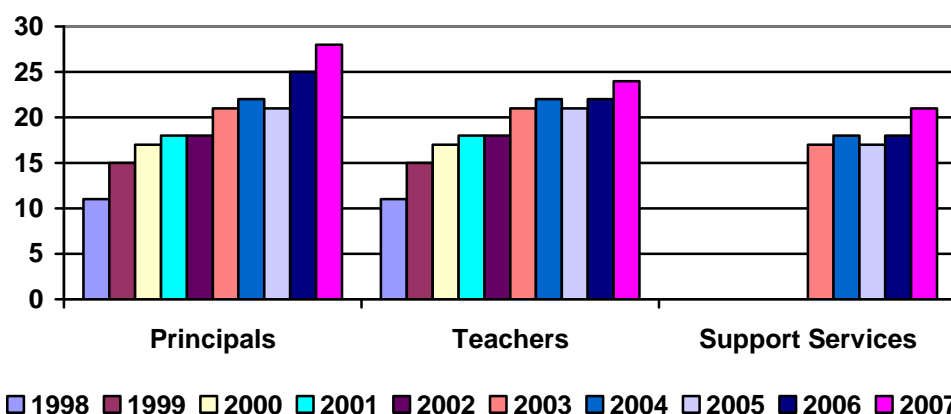
> *Advanced* – complete integration and mastery of the technology, using it effortlessly as a tool to accomplish a variety of learning, instructional, and/or management tools

Since 1998, the percentages of staffs with beginner skills have decreased steadily while the percentages with advanced skills have increased. The proportion of teachers estimated as beginner technology users has decreased from 40 percent reported in 1999 to 19 percent reported in 2004 and 2005, to 18 percent in 2006, and to 16 percent in 2007. The rate of administrators (e.g., principals) estimated as having beginner skills has decreased from 35 percent in 1999 to seven percent in 2007.

Figure 10 illustrates the increase in the percentages of teachers, building administrators, and support services staff as having advanced technology skills from 1998 through 2007. (Note that the support services staff category was not included until 2003.) The rates of teachers reported as advanced users have more than doubled, from 11 to 24 percent. The group with the highest rate of advanced skills in 2007 is administrators at 28 percent.

Figure 10

Percent Faculty/Staff with Advanced Skills, 1998 - 2007

To meet the state's definition of technology literacy for educators, administrators, teachers, and support services staff must possess intermediate skills or higher. Figure 11, which combines intermediate and advanced skills, indicates this standard was met in 2007 by 93 percent of administrators, 84 percent of teachers, and 73 percent of support services staff. (Note again that the support services staff category was not included until 2003.)

Figure 11

Percent Faculty/Staff with Intermediate or Advanced Skills, 1998 - 2007

Training Item 2 – Number of teachers participating in education technology related professional development (including eMINTS)

Added in 2006, this item asks schools to report the number of teachers receiving education technology-related professional development by the number of hours completed. Table 12 presents data compiled for 2006 and 2007. The table indicates that while there was an overall increase in the number of teachers in technology-related professional development from 2006 to 2007, there were fewer numbers of teachers in the upper brackets (completing 15 to 30 and more than 30 hours).

Table 12

Number of Teachers In School Building Participating In Education Technology Professional Development (including eMINTS), 2006 and 2007

	2006		2007	
	Teachers	Buildings	Teachers	Buildings
Completed 1 to 15 hours	35,652	1,717	40,348	1,894
Completed 15 to 30 hours	8,557	870	6,492	823
Completed > 30 hours	3,368	622	3,095	602
Total	47,577		49,935	

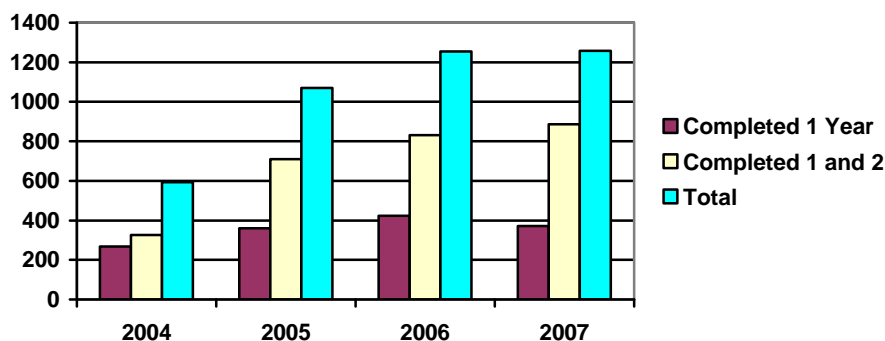Training Item 3 – Number of eMINTS-trained teachers

Added in 2004, item four asks schools to report the number of teachers in the building who have completed one or both years of eMINTS professional development. The *enhancing* Missouri's Instructional Networked Teaching Strategies (eMINTS) program – that serves as the state's instructional model of technology integration – supports teachers as they learn to integrate multimedia technology into inquiry-based, student-centered, interdisciplinary collaborative teaching practices that result in improved student performance, increased parent involvement, and enriched instructional effectiveness. While the majority of eMINTS-trained teachers received their professional development from eMINTS instructional staff, more and more teachers are receiving their professional development through district staff that has completed the eMINTS program's "train-the-trainer" professional development. The item was revised in 2006 to provide specificity about the numbers of teachers being trained in a variety of Professional Development programs offered by eMINTS, such as the Comprehensive eMINTS and the eMINTS4All programs for teachers and the train-the-trainer program for education technology specialists.

Figure 13 indicates the numbers reported for the original, Comprehensive eMINTS for teachers program, for 2004 through 2007. In 2004, building contacts reported having a total of 594 educators with one or both years completed of their eMINTS professional development programs. This number increased to 1,071 in 2005, to 1,660 teachers in 2006, and to nearly 1,800 in 2007.

Figure 13

Numbers of eMINTS-Trained Teachers, By Number of Years of Training, 2004 - 2007

Beginning in 2006, districts were also asked to report the number of individuals being trained in other two-year eMINTS professional development programs, such as eMINTS4All and the eMINTS for Education Technology Specialists programs. Table 14 reports these numbers. Although the numbers continue to climb, the percentage of teachers trained to total number of teachers continues to show a wide gap.

Table 14

Number of eMINTS-Trained Teachers, By Number of Years of Training and Program, 2006 and 2007

Numbers of teachers completing:	Year 1 only 2006	Year 1 only 2007	Both Year 1 and 2 2006	Both Year 1 and 2 2007	Total 2006	Total 2007
• Comprehensive eMINTS	423	372	831	886	1254	1258
• eMINTS4All	179	204	74	196	253	400
• Education Technology Specialists	71	21	82	87	153	108

HARDWARE AND SUPPORT

Hardware and support items deal with technology access and support issues at the building level. These items cover the level of technical support, and the numbers of computers by type and location (and student per computer ratios).

Hardware Item 1 – Building technical support

Building contacts were asked in item five to estimate the total of school staff or others directly responsible for technical maintenance and/or support of the building's hardware. Table 15 indicates the number of buildings relying on the various types of technical support provider. In general, buildings engage employees rather than non-employees to provide such support. In 2007, 94 percent of all buildings reported having employees responsible for technical maintenance and support as compared to 95% in 2006. For both years, 2006 and 2007, this role was filled predominantly by district technology staff. The number of staff varied widely across the buildings, with the median building reporting 1.14 FTE. In 2007, about one-third of buildings contracted for technical maintenance and/or support, with the average contract for 104 hours of

work. The number of contract hours increased for 2007, while the number of FTE decreased, as indicated in Table 15.

Table 15

Building Technical Support, 2006 and 2007

	Buildings				Buildings	
Employee Type	2006	2007	Non-Employee Type	2006	2007
District technology staff	1778	1813	Vendors/contractors	596	668
School certificated staff	696	862	Students	208	178
School non-certificated staff	594	436	Parents/community	23	20
None	108	138	None	1465	1404

Hardware items 2 and 3 – Computers in the building
Annually, buildings complete tables to indicate computers by type and location. Hardware and Support item 2 counts computers by platform and speed capacity and item 3 counts multimedia-equipped and Internet-connected computers. Locations include computer labs, specifically designated for computer work; classrooms; library media centers; and administrative, such as principal and guidance counselor offices. While computer information has been collected since the first COT, there have been periodic changes to keep abreast of the new technology. And, in 2005, classrooms were divided into grade spans of PreK-2, 3-5, 6-8, 9-12, and area career centers, and handheld computers were added to the table.

Table 16 summarizes the numbers of computers the 2,281 buildings reported for items 2 and 3 in 2007. This computer table includes the data entered by the buildings as well as sub-totals and totals related to the different locations and computer types.

Location categories include: Classroom Details (highlighted in light green) for computers located across the grade spans and area career centers; Instructional Room Details columns (highlighted in light turquoise) for computers located in all classrooms plus computer labs and libraries; and, Total Computers (highlighted in pale blue) that makes a distinction between instructional and administrative uses of computers.

Computer Type headings include: Apple/Mac computers, PCs and PC-compatible computers, total computers, handheld devices, and all machines. Sub-headers are provided to detail modern, multimedia, and Internet-connected devices. Within the Mac and PC categories, the succeeding rows indicate newer models – the rows highlighted in gray represent older models and rows not highlighted indicate "modern" computers. Note that all ratios – the numbers of students per computer as depicted in Figures 18 to 20 – are based on 897,571 students, the official 2006-07 total enrollment for K-12 schools.

Table 16 shows a total of 343,306 computing devices located across the 2,218 school buildings, of which 95.5 percent are desktops or laptops (non-handheld devices), 91 percent are multimedia-equipped, and 95 percent are connected to the Internet. Over 80 percent of the non-handheld computers are designated as modern, with modern computers consisting of Mac G3 and G4 computers and PC/PC-compatible computers with at least a Pentium III and AMD machines with 450 or greater Mhz. Over 90 percent of computing devices are located in classrooms and other instructional rooms.

Table 16

Numbers, Types, and Location of Computers – 2007

Computers by Type & Location	Classroom Details					Instructional Room Details			Total Computers		
	PreK-2	3-5	6-8	9-12	Career Centers	Class Rooms (CL total)	Computer Labs	Library Centers	Instruction. (IR total)	Admin.	TOTAL
Apple/Mac											
LC series	379	215	46	62	6	708	317	20	1045	34	1079
Power Macs	516	414	185	316	42	1473	521	94	2088	31	2119
G3	3290	3567	2976	2589	167	12589	4845	1716	19150	526	19676
G4, later	2119	3379	2386	2746	317	10947	8917	1918	21782	838	22620
Mac Total	**6304**	**7575**	**5593**	**5713**	**532**	**25717**	**14600**	**3,748**	**44065**	**1429**	**45494**
(% Modern)	(86%)	(92%)	(96%)	(93%)	(91%)	(92%)	(94%)	(97%)	(93%)	(89%)	(93%)
PC/PC-Compatible											
486, earlier	165	102	95	249	24	635	173	139	947	95	1042
Pentium I-II	2434	2615	2337	3367	368	11121	2782	1048	14951	765	15716
Celeron	3069	5140	4194	5103	409	17915	8791	2439	29145	2004	31149
AMD <450 MHz	960	1645	1012	2133	305	6055	4278	955	11288	889	12177
Pentium III	4987	6365	5805	8093	876	26126	11190	3478	40794	2408	43202
Pentium IV+	13859	23957	18445	28684	5211	90156	58475	14172	162803	14446	177249
AMD >450 MHz	183	360	252	488	42	1325	382	292	1999	130	2129
PC Total	**25657**	**40184**	**32140**	**48117**	**7235**	**153333**	**86071**	**22523**	**261927**	**20737**	**282664**
(% Modern)	(55%)	(61%)	(58%)	(61%)	(73%)	(60%)	(68%)	(64%)	(59%)	(70%)	(64%)
Total Computers	**31961**	**47759**	**37733**	**53830**	**7767**	**179050**	**100671**	**26271**	**305992**	**22166**	**328158**
Ratio						5.01	8.92	34.17	2.93		2.74
Modern	24438	37648	29864	42600	6613	141143	83809	21578	246528	18248	264876
(% Modern)	(77%)	(79%)	(79%)	(79%)	(85%)	(79%)	(83%)	(82%)	(81%)	(82%)	(81%)
Ratio						6.36	10.71	41.60	3.64		3.39
Multimedia	29919	45064	36005	50128	6429	167545	97927	25511	290983	22037	313020
(% Multimedia)	(94%)	(94%)	(95%)	(93%)	(83%)	(94%)	(97%)	(97%)	(95%)	(99%)	(95%)
Ratio						5.36	9.17	35.18	3.08		2.87
Handheld Devices	**1253**	**4511**	**3454**	**2480**	**233**	**11931**	**1081**	**451**	**13463**	**1685**	**15148**
ALL MACHINES	**33214**	**52270**	**41187**	**56310**	**8000**	**190981**	**101752**	**26722**	**319455**	**23851**	**343306**
Ratio						4.70	8.82	33.59	2.81		2.61
Connected	30316	46615	37956	53480	6797	175164	100796	26696	302656	23376	326032
(% Connected)	(91%)	(89%)	(82%)	(95%)	(85%)	(92%)	(99%)	(99%)	(95%)	(98%)	(95%)
Ratio						5.12	8.90	33.62	2.97		2.75

Table 17 compares key computer statistics for years 2005-2007. (Note that 2005 is when handhelds and grade spans were added to the computer table.) Each year indicates an increased number of total computing devices. However, the addition of 15,248 devices in 2007 represents only a four percent increase, compared to 28,945 computers, and representing almost a 10 percent increase between 2005 and 2007. Other statistics of note include the continued percentages of computing devices that are multimedia-equipped (from 86 to 95 percent) and Internet-connected (from 91 to 95 percent). The rate of PC-compatible machines and the distribution of computing devices across classrooms and other instructional rooms have remained fairly constant the last three years.

Table 17

Numbers, Types, and Location of Computers, 2005 - 2007

	2005	2006	2007
Total number of computers (all devices)	299,113	328,058	343,306
• Percent desktop/laptop computers	97%	96%	96%
o Percent PC-compatible computers	85%	85%	86%
o Percent multimedia devices	86%	92%	95%
• Percent handheld devices	3%	4%	4%
• Percent Internet-connected devices	91%	92%	95%
• Percent instructional devices	93%	93%	93%
o Percent located in classrooms	56%	55%	56%
▪ Grades PreK-2	18%	18%	17%
▪ Grades 3-5	26%	26%	27%
▪ Grades 6-8	21%	21%	22%
▪ Grades 9-12	30%	30%	29%
▪ Area career centers	4%	4%	4%
o Percent located in computer labs	29%	30%	30%
o Percent located in library centers	7%	7%	8%

The range of computers located in a lab setting remains steady at or near the 30 percent range, after a high of 36 percent in 1998. The percentage of computers residing in classrooms increased from 47 percent in 1999, to 56 percent in 2004, where it has remained steady. The shift is more noticeable when looking at the placement rates of computers within the instructional settings. In 2006 and 2007, only 32 percent of "instructional" computers were located in labs as compared to 41 percent in 1999. The percent of "instructional" computers in classrooms has grown from 52 percent in 1999 to 60 percent in 2006 and 2007. While the number of handheld devices has increased each year, handhelds only account for three to four percent of the total.

2007 was the fourth year that building contacts were asked to indicate the status of Internet connectivity by type of computer (desktop or laptop) and type of connection (wired or wireless) on Hardware and Support item 3. As in previous years, and as one might expect, desktops predominantly had wired connections to the Internet and laptops had wireless connections.
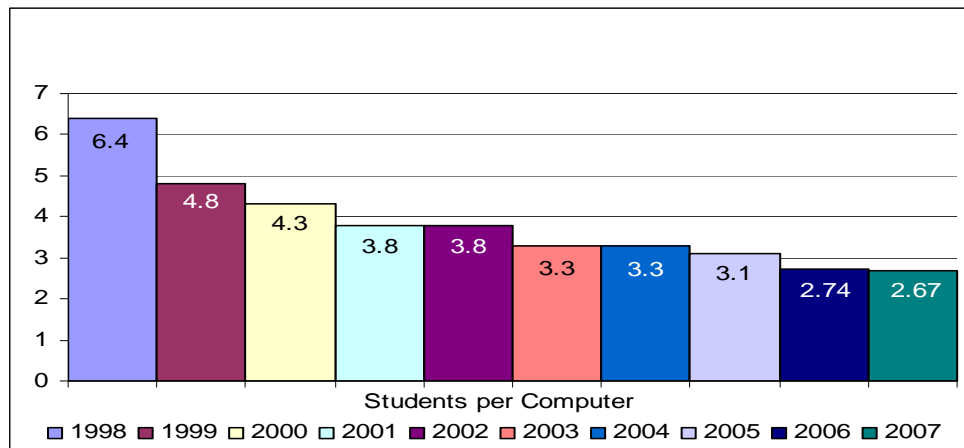
Students to Computer Ratios

Ratios are determined using the COT data regarding numbers and types of computers and Core Data fall enrollment figures. As schools purchase new computers, older computers may be relocated within or surplussed out of the district. The numbers of computers in use continue to climb, resulting in a steady decline in the numbers of students per computers. Ratios are declining related to both the number of students per high-speed (modern or Internet-capable) computer and Internet-connected computer. The greatest decline involves Internet-connected computers, as more and more buildings, classrooms, and computers are being connected to the Internet.

Figure 18 indicates the number of students per computer (all devices located across all buildings). That ratio has continued to decrease since 2002. As noted in Figure 18, the ratio in 2007 is 2.67 as compared to 2.73 in 2006, 3.09 in 2005, 3.26 in 2004, 3.29 in 2003 and 3.8 in 2002 and 2001.
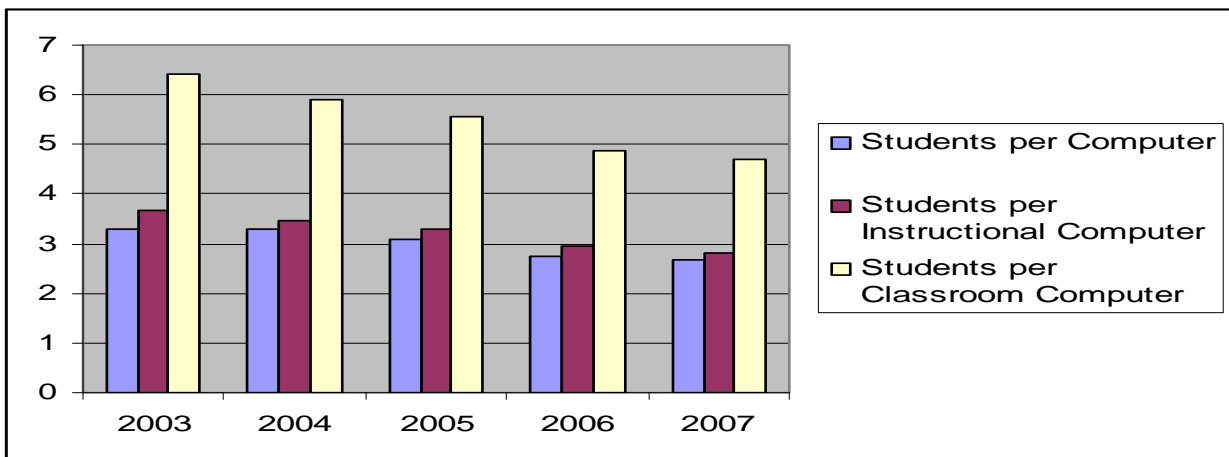
Figure 18

Number of Students per Computer, 1998 - 2007

However, ratios are much higher when examining the number of students of computers located in all instructional rooms and computers located only in classrooms. Figure 19 compares the three ratios: all computers, instructional computers, and classroom computers. The number of students per instructional computer in 2007 is 2.81 as compared to 2.94 in 2006, 3.3 in 2005, 3.48 in 2004, 3.66 in 2003, 4.21 in 2002, 4.34 in 2001, 4.65 in 2000, 6.4 in 1999, and 8.15 in 1998. The number of students per classroom computer in 2007 is 4.70 as compared to 4.88 in 2006, 5.55 in 2005, 5.89 in 2004 and 6.42 in 2003. As indicated in Figure 19, the number of students per classroom computer is nearly double the number of students per all computers.

Figure 19

Number of Students per Computer by Location, 2003 - 2007

As with the other ratios, the number of students per Internet-connected computer has also dropped consistently. Figure 20 charts Internet-connection ratios from 1998 through 2007. In 1998, there were 14 students per connected computer; in 2007 that number was closer to three students.

Figure 20

Number of Students per Internet-Connected Computer, 1998 - 2007
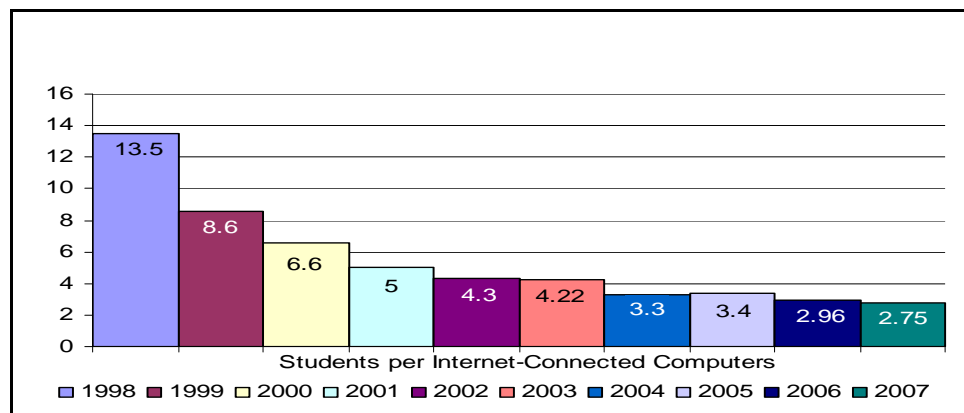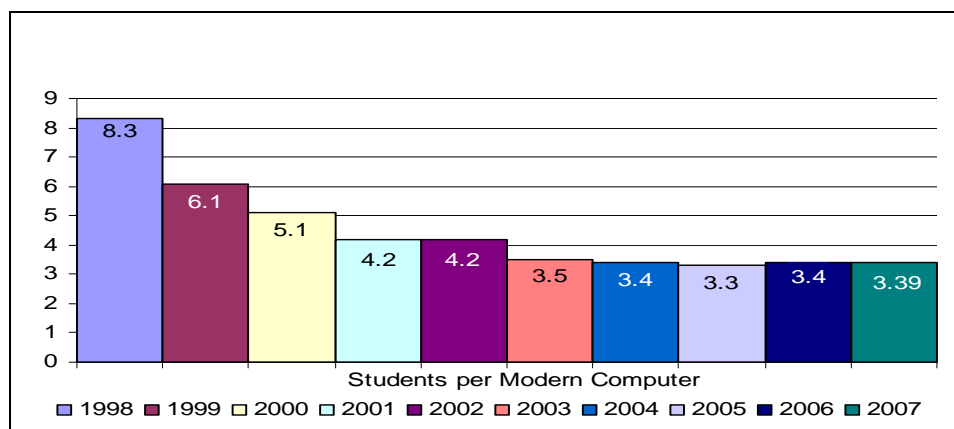

Figure 21 charts modern computer ratios. While this number has also decreased each year, the ratios are higher because the standard is set higher. As described earlier, the Department disaggregates machines by date or capacity. About 80 percent of the non-handheld computers reported in 2007 could be designated modern and thus having certain capacity. For 2006 and 2007, modern computers consist of Mac G3, Mac G4, PC/PC-compatible computers with at least a Pentium III, and AMD machines with 450 or greater Mhz. Figure 21 shows that the number of students per modern computer has dropped from 8.3 in 1998 to 3.39 in 2007.

Figure 21

Number of Students per Modern Computer, 1998 - 2007

Hardware item 4 – Technology in instructional rooms

For this item, buildings are asked to report on a list of technologies the state believes should be available in instructional rooms based on current research and the eMINTS instructional model. As described earlier, educators teaching the eMINTS way integrate technology into inquiry-based, student-centered, interdisciplinary, and collaborative teaching practices that result in improved student performance. Critical classroom resources include telephone access, multimedia-equipped and Internet-connected computers, and a teacher workstation that includes a dedicated projection device (LCD panel or other type of video projector) and access to a printer.

Table 22 summarizes the data collected in 2007. Over 90 percent of all rooms are Internet ready via wired or wireless connectivity and have at least one multimedia-equipped computer that is connected to the Internet. However, only two in three rooms have telephone access and one in three has a full suite of classroom technology.

22

Table 22

Room Technology Status – 2007

	Labs	PreK-2	3-5	6-8	9-12	ACC	LMCs	Admin.	Total
			Classrooms						
Total number of rooms	4,566	13,547	13,397	14,387	17,968	1,805	2,306	12,364	80,340
• With telephone access	2,856	8,114	17,946	8,959	11,861	1,222	1,975	11,644	54,577
• With Internet access (wired or wireless)	4,337	13,296	13,239	14,073	17,506	1,745	2,214	12,090	78,500
• With ≥1 multimedia-equipped computer	4,244	12,863	12,838	13,356	16,858	1,638	2,134	11,453	75,384
• With ≥1 Internet-connected computer	4,151	12,630	12,619	13,332	16,738	1,539	2,081	11,205	74,295
• With ≥1 multimedia, Internet-connected computer, printer access, projection device	2,860	4,297	5,796	5,347	6,423	557	1,105	1,782	28,167

Table 23 compares technology status for instructional rooms in 2006 and 2007. (Note that a programming error made it impossible to report 2005 data.) Overall, computer labs, libraries, and classrooms are on the verge of having the same access to computer technologies in terms of having at least one multimedia and Internet-connected computer. Although computer labs and classrooms saw marked increases in access to telephones, libraries continue to have greater access. While still far behind the other categories, the most dramatic increases were seen in the final category that includes a projection device and access to a printer.

Table 23

Computer Lab, Classroom, LMC Technologies, 2006 and 2007

	Labs		Classrooms		Libraries	
	2006	2007	2006	2007	2006	2007
Number of Instructional Rooms	4,305	4,566	56,558	61,104	2,164	2,306
• with telephone access	58%	63%	60%	78%	84%	86%
• with Internet access	98%	95%	98%	98%	98%	96%
• with multimedia computer	95%	93%	93%	94%	93%	93%
• with Internet-connected computer	93%	91%	92%	93%	91%	90%
• with complete teacher workstation	59%	63%	29%	37%	44%	48%

Hardware items 5 and 6 – Technical maintenance and repair
First addressed in 2003, item five asks for the length of time needed for technical problems or repairs to be resolved. Buildings report in 2007 that it typically takes two-to-three working days to resolve minor or routine technical problems or repairs – the same length of time reported since 2003.

INTERNET CONNECTIVITY / DISTANCE LEARNING
This section of the COT deals with building networking, Internet, and interconnectivity issues. Items address the systems in place that facilitate quality, secure, and safe access to people and information both in and outside the school building.
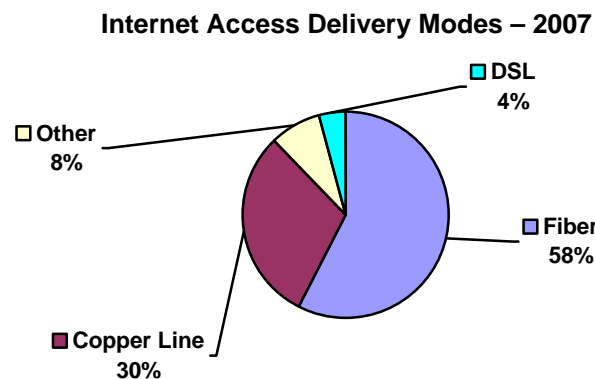
Connectivity item 1 – Internet bandwidth
Table 24 profiles Internet access data reported since 2002, indicating increasing percentages of school buildings accessing the Internet through dedicated, direct means. As in 2006, all but four buildings report having a direct Internet connection. Over 1,250 buildings (56%) report having a partial T1 and over 900 buildings (41%) report having greater than a T1 line.

Table 24

Internet Access, 2002-2007

Number of buildings	2002	2003	2004	2005	2006	2007
Total number of buildings	2,128	2,250	2,207	2,211	2,229	2,218
• Percent with Internet access	97%	98%	99%	99%	99%	99%

Connectivity item 1 was modified in 2005 to also ask about the delivery mode of the connectivity. Figure 25 indicates that the primary methods for 2007: 1,265 buildings (57 percent) have fiber connections, 655 (30 percent) use copper line, and 82 (four percent) have digital subscription, or DSL. Of the remaining buildings, 30 (1 percent) report having no method for accessing the internet.

Figure 25

Internet Access Delivery Modes – 2007

Connectivity item 2 – Computer networking

Originally, this item had two parts – percentage of computers in the building connected through a local or wide area network and whether the building was connected to the district LAN or WAN. The item was revised in 2005 to deal only with computer networking, with the part about building connectivity moved to the District Census. Table 26 shows an increase in the numbers of computers connected to a building (or district) network, from 88 percent of computers in 2003 to virtually all computers by 2007.

Table 26

Computer Networking, 2003 - 2007

	2003	2004	2005	2006	2007
Percent computers connected to building LAN (or district WAN)	88%	94%	96%	100%	100%

Connectivity item 3 – Distance learning systems

This long-standing item addresses accessibility to instructional programming that is originated from outside the building. The item was updated in 2005 to further define and distinguish among five options: Cable television and Satellite programming that incorporate one-way instructional video; Interactive television (or I-TV) and Desktop video-conferencing that provides two-way audio and video instruction; and Web-based online instruction that is Internet-based and non-interactive.

Table 27 compares distance learning data for the last three years – since the item was revised as described above. In 2007, almost four of five buildings (78 percent) report having at least one distance learning system available, compared to three in four buildings (75 percent) in 2005. The most commonly used system for all three years is cable television, in place in over half of the buildings. Satellite programming and I-TV have dropped slightly, while both kinds of online-based instruction have increased; non-interactive online instruction increased from 32 percent to 43 percent, and videoconferencing increased from 12 percent to 14 percent. [It should be noted that schools and students enrolled in the state's new Virtual Instruction Program (MoVIP) – in effect for the 2007-08 school year -- would make use of online instruction.]

Table 27

Distance Learning Systems, 2005 - 2007

	2005		2006		2007	
Distance Learning System	Number	Percent	Number	Percent	Number	Percent
Total number of buildings reporting	2,211	100%	2,229	100%	2,218	100%
• Cable television: one-way video	1,140	51%	1,191	53%	1,175	53%
• Satellite programming: one-way video	399	18%	405	18%	351	16%
• Interactive television: two-way interactive	485	22%	434	19%	419	19%
• Desktop/IP-based videoconferencing*	270	12%	265	12%	307	14%
• Online instruction: non-interactive	703	32%	807	36%	945	43%
• None	551	25%	510	23%	483	22%

TECHNOLOGY USAGE
The remaining building items address how building faculty, staff, and students use available education technologies. Emphasis is placed on "routine" use, described as being used or implemented at least three times per week. As explained earlier, the Missouri School Improvement Program (MSIP) includes a standard pertaining access and use of "Instructional Resources" that includes technology-based resources, and the scoring guide used for state approval of district technology plans also places emphasis on usage data. Both of these accountability measures factor in the following analyses.

Usage item 1 – Routine use of technology, by technology type
This item has typically asked how principals, teachers, and students use educational software, the Internet, and electronic resources. The item also helps track the impact of state and federal funding that promotes the use of educational technologies. The resources listed below are made available – with funding from the Secretary of State and Missouri State Library – to districts via their participation in the state-supported MOREnet Technology Network Program (TNP). In 2007, 516 districts and charter LEAs, and the state schools for the blind and deaf, were TNP customers.
- EBSCO*host* Electronic Journals Service – a gateway to thousands of journals containing millions of articles from hundreds of different publishers.
- Electronic encyclopedia
- Newsbank – comprehensive database resource containing information from newspapers.

As represented in Table 28, COT findings indicate that teachers and students routinely use educational software, school administrators and teachers routinely use email, but few make use of the electronic resources. While all statistics increased from 2006 to 2007, increases were modest at best and disappointing. It should be noted that MOREnet and the Department continue to advertise these resources, staffs find when interacting with teachers at conferences and workshops that many are unaware that the resources exist and are available free of charge. It should also be noted that not all populations would be expected to make regular use of all the resources.

Table 28

**Buildings Reporting Use of Electronic Resources,
by User Type for 2006 and 2007**

	Principals		Teachers		Students	
Resource	2006	2007	2006	2007	2006	2007
Educational software	44%	47%	76%	79%	79%	80%
Email	97%	98%	94%	96%	11%	13%
EBSCO*host*	16%	17%	23%	24%	22%	23%
Electronic encyclopedia	14%	16%	30%	32%	34%	36%
Newsbank	5%	8%	7%	12%	7%	11%

Usage item 2 – Routine technology use, by function

This item asks building contacts to estimate the percentages of administrators (e.g., principals), teachers, and students who routinely use computers and computer technologies for specific functions. Tables 29 through 31 illustrate such technology usage for 2000 through 2007. While in some instances the 2007 responses are the highest ever reported, there are other instances of only modest increases, and some categories that are still below expectations. As stated earlier, "routine use" was upgraded in 2004 to indicate three or more times per week.

Over the years, the areas where principals show the greatest increase in usage include the use of technology to track student performance, manage student records, conduct research, assess student performance, and produce media, web, or multimedia products or presentations for demonstration purposes. Little or no increases are shown in using technology to communicate electronically with peers, experts, or others (95 percent), manage student records (87 percent), communicate electronically with parents and students (86 percent), and track student performance (85 percent). While routine use increased in all areas since 2000, the areas with the most dramatic increases include using technology to: communicate with peers and experts (58 to 95 percent), produce media presentations (from 29 to 61 percent), track student performance (from 54 to 85 percent), and participate in online coursework (which tripled from 4 to 12 percent).

Table 29

Routine Use of Technology by Building Principals, 2000-2007

Technology Function	2000	2001	2002	2003	2004	2005	2006	2007
Produce media/presentation products	29%	31%	43%	46%	50%	54%	57%	61%
Produce written products	68%	56%	67%	73%	77%	79%	80%	82%
Conduct online research	62%	58%	69%	79%	80%	78%	81%	82%
Communicate with peers, experts, others	58%	48%	63%	79%	87%	93%	95%	95%
Communicate with parents and students	NA	NA	NA	NA	NA	81%	83%	86%
Prepare lesson plans	9%	13%	14%	16%	15%	11%	11%	14%
Manage student records	66%	60%	71%	81%	83%	82%	85%	87%
Track student performance	54%	56%	67%	78%	81%	80%	84%	85%
Assess student performance	NA	NA	58%	67%	72%	71%	74%	76%
Deliver/present instruction	18%	21%	28%	37%	39%	37%	37%	41%
Enroll in online coursework	NA	NA	NA	4%	7%	11%	11%	12%

Table 30 addresses teacher use of technology from 2000 through 2007. Ninety percent of teachers in 2007 use technology to communicate with peers, experts, or others, and over 80 percent typically use technology to write (82 percent), track student performance (82 percent) and manage student records (81 percent). The areas showing the most increases over time, include

using technology to: communicate with peers and experts (from 50 to 90 percent), manage student records (from 45 to 81 percent), produce media products (from 24 to 59 percent), email parents and students (from 46 to 78 percent), track student performance (from 52 to 82 percent), and participate in online coursework (which almost tripled from 5 to 14 percent).

Table 30

Routine Use of Technology by Teachers, 2000-2007

Technology Function	2000	2001	2002	2003	2004	2005	2006	2007
Produce media/presentation products	24%	29%	37%	43%	47%	48%	51%	59%
Produce written products	66%	60%	71%	77%	81%	79%	80%	82%
Conduct online research	59%	56%	67%	74%	75%	75%	76%	77%
Communicate with peers, experts, others	NA	NA	NA	50%	68%	85%	88%	90%
Communicate with parents and students	46%	39%	53%	62%	66%	72%	74%	78%
Prepare lesson plans	47%	45%	59%	64%	66%	66%	68%	71%
Manage student records	45%	46%	56%	64%	70%	73%	76%	81%
Track student performance	52%	48%	61%	69%	74%	75%	77%	82%
Assess student performance	NA	NA	55%	64%	69%	70%	72%	78%
Deliver/present instruction	26%	29%	38%	46%	51%	57%	60%	67%
Enroll in online coursework	NA	NA	NA	5%	9%	11%	12%	14%

Table 31 addresses student use of technology, 2000 through 2007. While students routinely use technology more than they did in 2000, their usage rates generally lag behind those noted for teachers and administrators – except in categories, producing written products and conducting online research, which involve over half of students. Media products increased from 22 to 46 percent, email to communicate with parents and students more than tripled (from 7 to 24 percent), and email to communicate with peers and experts doubled (from 12 to 24 percent).

Table 31

Routine Use of Technology by Students, 2000-2007

Technology Function	2000	2001	2002	2003	2004	2005	2006	2007
Produce media/presentation products	22%	23%	32%	37%	29%	40%	43%	46%
Produce written products	61%	52%	65%	68%	46%	59%	60%	61%
Conduct online research	57%	49%	59%	63%	NA	53%	56%	58%
Communicate with peers, experts, others	NA	NA	NA	NA	12%	20%	21%	24%
Communicate with parents and students	NA	NA	NA	NA	7%	13%	12%	24%
Enroll in online coursework	NA	NA	NA	NA	7%	2%	2%	4%

Usage item 3 – Technology integration support
Usage item 3 asks building contacts to estimate employee FTE and/or non-employee contract hours related to helping teachers integrate technology into curriculum and instruction. As indicated in Table 32, integration assistance has evolved over time. In 2003, a building administrator or district technology staff person provided such assistance. By 2007, the reliance on district staff has decreased, with integration help provided by the school library media specialist and other teachers. The percentage of buildings with instructional technology specialists grew from 24 to 37 percent since between 2003 and 2007.

Table 32

School Leaders in Technology Integration, 2003-2007

Position Responsible for Providing Assistance	Percent Buildings Reporting				
	2003	2004	2005	2006	2007
School building administrator	53%	57%	53%	54%	50%
Technology coordinator (any)	49%	58%	NA	NA	NA
• District technical staff	NA	NA	47%	54%	44%
• School technical staff	NA	NA	20%	21%	18%
Teacher(s)	46%	48%	52%	55%	52%
Library media specialist	43%	54%	58%	60%	61%
Instructional technology specialist	24%	32%	34%	34%	37%

Usage item 4 – Teacher technology integration

Added in 2002, this item asks the building contact to estimate the percentage of teachers who fully integrate technology into curriculum and instruction. Based on the eMINTS instructional model, full integration is defined as the "ability to use instructional strategies that promote authentic project-based learning opportunities, student teamwork, collaboration and communication using technology in the classroom curriculum." Table 33 indicates an almost two-fold increase from 2002 to 2007. In 2002, the median building indicated 33 percent of teachers fully integrating technology, compared to 60 percent in 2007

Table 33

Percent Teachers Integrating Technology, 2002-2007

	2002	2003	2004	2005	2006	2007
Teachers fully integrating technology	33%	41%	53%	50%	50%	60%

Usage item 5 – Technology-mediated feedback systems

Added in 2002 to align with the new 2002-06 state plan, this last item asks about technology-mediated feedback systems in place to help facilitate effective communication between schools and patrons, including students and parents. This item distinguishes between one-way information dissemination (such as a Website or mailing) and interactive systems that help patrons to access and/or provide specific information or feedback back. In 2007, all but 57 buildings provided some form of system. As shown in Table 34, the prevailing systems include email and voice mail. While at still at much smaller rates, steady increases are noted in the use of listservs, automated systems for absentee reporting, and web-based homework hotlines.

Table 34

Percent Buildings with Technology-mediated Feedback Systems, 2002-2007

Feedback System	Number of Buildings					
	2002	2003	2004	2005	2006	2007
Total number of buildings reporting	2,128	2,250	2,207	2,211	2,229	2,218
• Email	39%	89%	94%	94%	95%	95%
• Voice mail	26%	47%	47%	50%	54%	57%
• Listserv	1%	16%	14%	13%	16%	18%
• Automated absentee calling system	8%	13%	13%	19%	21%	23%
• Homework hotline via telephone	10%	12%	13%	15%	13%	12%
• Homework hotline via Web	3%	7%	8%	12%	14%	16%

Appendix A: Census Surveys with Response Totals

2007 Summary Data

Missouri districts complete the Census of Technology during the April Cycle of the Department's online Core Data Collection system, which includes a district-level report form and a building-level report form for each school in the district. The Core Data Manual provided directions for completing the Census and definitions of key terminology. The effective "Census" date each year is March 1.

Below is a summary of the data reported during the April 2007 Census of Technology. Refer to the entire *2007 Census of Technology Report* for more details, including trend data analyses. During this census year, the number of existing LEAs remained the same at 524; however, the Charter schools were given LEA status, thus adding 16 to the number of LEAs reporting Census data.

DISTRICT Level Census Form
N=540

1. Year district technology plan was last approved by DESE [All plans are approved for up to three years]
    Approval cycle: 55 plans due 2008   233 plans due 2009   264 plans due 2010 (Includes additional Charter LEAs receiving status after close of Census of Technology reporting cycle.)

2. Board-approved education technology standards and population(s) that must meet the standards.

Standard Type	# Districts	% Districts
Locally-developed	454	84%
Adopted ISTE National Educational Technology Standards (NETS)	228	42%
Adopted ITEA Standards for Technological Literacy: Content for the Study of Technology	62	11%
Other: 8=Show-Me Standards	28	5%
None	29	5%

Population - Students			Population - Staff		
Grade Level	# Districts	% Districts	Staff Type	# Districts	% Districts
PreK-2	475	88%	Administrators	456	84%
3-5	490	91%	Teachers	467	86%
6-8	496	92%	Support services staff	403	75%
9-12	417	77%	None	70	13%
Area career center (N = 59)	59	100%			
None	31	6%			

Summary: Districts are more likely to have educational technology standards in place for students than for staff (94% versus 87%, respectively). Student standards are most likely in place for students in career centers and upper elementary and middle/junior high schools than in early elementary grades and high school.

3. Estimated total FTE of district-level staff directly responsible for technical maintenance and support of hardware.

Employee Type	# Districts	% Districts	Average FTE	Median FTE
District technology staff	503	93%	8.4	1.0
None	37	7%		

Non-Employee Type	# Districts	% Districts	Average Contract	Median Hours
Vendor/Contractor	194	36%	270.87 hours	100 hours
None	346	64%		

4. District-supported administrative systems. (Check ALL that apply) [Number and Percent Districts Reporting]

System Type	# Districts	% Districts	System Type	# Districts	% Districts
Accounting/budgeting/payroll	532	99%	IEP management	427	79%
Classroom website hosting	316	59%	Instructional management	162	30%
Communication/email	507	94%	Inventory	342	63%
Course scheduling	409	76%	Library catalog	504	93%
Discipline	458	85%	School safety	145	27%
Distance education	221	41%	Student attendance	512	95%
Extra curricular scheduling	227	42%	Student fees	296	55%
Food Service	470	87%	Student performance	379	70%
Grade book	467	86%	Teacher evaluations	189	35%
Health Service	421	78%	Technical support	323	60%
Human resources	219	41%	Transportation	268	50%

5. All buildings in district are connected through a wide or local area network.

District Network Status	# Districts	% Districts
Yes	491	91%
No	49	9%

6. Core content area(s) in which technology is integrated. (Check ALL that apply)

Content Area	# Districts	% Districts
Communication Arts	531	98%
Science	512	95%
Social Studies	503	93%
Mathematics	504	93%

7. Estimated percentage of following populations with district-provided email accounts.

Student Grade Level	# Districts	% Districts	Median % Accounts
PreK-2	10	2%	100%
3-5	31	6%	33%
6-8	57	11%	75%
9-12	118	22%	20%
None	405	75%	-

Staff Type	# Districts	% Districts	Median % Accounts
Administrators	522	97%	100%
Teachers	518	96%	100%
Support Services Staff	503	93%	100%
None	16	3%	-

Summary: Districts are more likely to provide email accounts to staff than students (97% and 25%, respectively), with all districts providing email for administrators and teachers (100% and 100%). Policies on providing student email accounts range widely, and with the addition of 16 Charter LEAs this year, and the variety of technology schema they present, these numbers will likely continue to change in the coming years.

8. Estimated percentage of district 8th graders who are technologically literate. Median = 90%

9. Amount budgeted for technology for current year.
    Total = $135,763,395   Average = $251,414   Median = $50,000

10. Dollar value of district E-rate discount for current year (per funding commitment decision letters). [N = 540 districts]
    Total = $25,704,939   Average = $64,585   Median = $10,610

11. Estimated percentage of E-rate discount used to support education technology.   Median = 50%

SCHOOL Building Level Census Form
N = 2218

PLANNING

1. Type of school building technology plan.

Plan Type/Status	# Districts	% Districts
Integrated in district plan	2011	91%
Stand-alone plan	184	8%
Do not have building plan	15	1%

TRAINING

1. Estimated percentage of faculty/staff in school building at each skill level of technology use.

	Skill Level		
Faculty/Staff	Beginner	Intermediate	Advanced
Administrator(s)	7%	64%	28%
Teachers	16%	59%	24%
Support Services Staff	27%	51%	21%

Summary regarding technology skill levels: Over 90% of administrators have intermediate or advanced skills, compared to 83% of teachers and 72% of support services staff.

2. **Number of teachers in school building participating in education technology-related professional development (including eMINTS).**

Hours Professional Development	# Teachers	# Buildings
Completed less than 15 hours	**49,732**	**2,457**
Completed 15 to 30 hours	**6,492**	**823**
Completed more than 30 hours	**3,095**	**602**
TOTAL	**59,319**	**3,882**

Summary: Almost 60,000 teachers participated in ed-tech professional development in the 2005-06 school year, with 83% of those completing less than 15 hours.

3. **Number of eMINTS-trained teachers in school building, by training type.**

	Completed Year 1 Only		Completed Years 1 & 2	
eMINTS Professional Development Type	# Teachers	# Buildings	# Teachers	# Buildings
Comprehensive eMINTS for Teachers	**372**	**162**	**886**	**314**
eMINTS for Education Technology Specialists	**21**	**15**	**87**	**54**
Other two-year eMINTS programs	**204**	**60**	**196**	**52**
TOTAL	**597**		**987**	

HARDWARE AND SUPPORT

1. Estimated total FTE of school building staff or total hours of others directly responsible for technical maintenance and/or support of hardware. Overall Averages: 1.14 FTE   104 Contract hours

Employee Type	# Buildings	% Buildings
District technology staff	1,813	82%
School certificated staff	862	28%
School non-certificated staff	436	22%
None	138	6%

Non-Employee Type	# Buildings	% Buildings
Students	178	8%
Parents/community members	20	1%
Vendors/contractors	668	30%
None	1,404	63%

Summary: All but six percent of buildings report having someone overseeing the building's technology, which is generally provided by a district-level technology staff position.

2. **Computers by type and location within school building.**

	Computer		Classrooms Rooms				Library	Admin.	
Computer Platform	Labs	PreK-2	3-5	6-8	9-12	ACC	Centers	Offices	Total
APPLE/MAC									
LC series and lower	317	379	215	46	62	6	20	34	1,079
Power Mac series	521	516	414	185	316	42	94	31	2,119

Hardware and Support (continued)

G3	4,845	3,290	3,567	2,976	2,589	167	1,716	526	19,676
G4 or later	8,917	2,119	3,379	2,386	2,746	317	1,918	838	22,620
Sub-Total	14,600	6,304	7,575	5,593	5,713	532	3,748	1,429	45,494
PC COMPATIBLE									
486 or earlier	173	165	102	95	249	24	139	95	1,042
Pentium I or II	2,782	2,434	2,615	2,337	3,367	368	1,048	765	15,716
Pentium III	11,190	4,987	6,365	5,805	8,093	876	3,478	2,408	43,202
Pentium IV or later	58,475	13,859	23,957	18,445	28,684	5,211	14,172	14,446	177,249
Celeron	8,791	3,069	5,140	4,194	5,103	409	2,439	2,004	31,149
AMD (< 450 MHz)	4,278	960	1,645	1,012	2,133	305	955	889	12,177
AMD (450+ MHz)	382	183	360	252	488	42	292	130	2,129
Sub-Total	86,071	25,657	40,184	32,140	48,117	7,235	22,523	20,737	282,664
Total Mac/PC	100,671	31,961	47,759	37,733	53,830	7,767	26,271	22,166	328,158
HANDHELDS	1,081	1,253	4,511	3,454	2,480	233	451	1,685	15,148
TOTAL	101,752	33,214	52,270	41,187	56,310	8,000	26,722	23,851	343,306

3. **Number of Internet connected computers and multimedia equipped computers by location and type of connection.**

Computer and Connection Type	Computer Labs		Classrooms Rooms				Library Centers	Admin. Offices	Total
		PreK-2	3-5	6-8	9-12	ACC			
Multimedia Equipped	97,927	29,919	45,064	36,005	50,128	6,429	25,511	22,037	313,020
Internet Connected	100,796	30,316	46,615	37,956	53,480	6,797	26,696	23,376	326,031
Wired Connection									
Desktop	86,177	27,572	40,308	32,645	46,224	6,021	21,844	19,505	280,296
Laptop	1,403	711	1,456	1,061	1,665	188	534	1,751	8,769
Handheld	90	192	446	364	345	14	5	218	1,677
Wireless Connection									
Desktop	1,791	309	1,012	269	666	123	399	159	4,728
Laptop	11,185	1,369	2,812	2,495	4,196	391	3,885	1,076	27,409
Handheld	150	163	581	1,119	384	60	29	667	3,153

Summary of computer tables:

	Number	Percent	Ratio
All Computer Types (including handheld devices)			
Total – all locations	343,306	100.0%	2.62
• Percent computers, non-handhelds		• 95.5%	
• Percent computers (non-handhelds) - PC/PC-compatible		• 82.3%	
Located in all instructional rooms	319,455	93.0%	2.81
Located in classrooms	190,981	56.6%	4.70
Multimedia-equipped Computers			
Total – all locations	313,020	100.0%	2.87
Located in all instructional rooms	290,983	92.9%	3.08
Located in classrooms	167,545	53.5%	5.36
Internet-connected Computers			
Total – all locations	326,031	100.0%	2.75
• Percent all connected computers - desktop computers		• 87.4%	
• Percent all connected computers - wired connection		• 89.1%	
Located in all instructional rooms	302,656	92.8%	2.96
Located in classrooms	175,164	53.7%	5.13
Modern Computers – Pentium 4, G4, equivalent (and higher)			
Total – all locations	260,472	100.0%	3.45
Located in all instructional rooms	240,480	92.3%	3.73
Located in classrooms	138,329	53.1%	6.49
Internet-capable Computers – Pentium 3, G3, equivalent (and higher)			
Total – all locations	260,472	100.0%	3.45
Located in all instructional rooms	240,480	92.3%	3.73
Located in classrooms	138,329	53.1%	6.49

SCHOOL Building Level Census Form

Hardware and Support (continued)

4. Technology by type and location within school building.

Room Technology Status	Comp. Labs	Instructional Rooms					Library Centers	Admin. Offices	Total
		PreK-2	3-5	6-8	9-12	ACC			
Total number of rooms	4,566	13,547	13,397	14,387	17,968	1,805	2,306	12,364	80,340
% with telephone access	63%	60%	59%	62%	66%	68%	86%	94%	68%
% with Internet access (wired or wireless)	95%	93%	99%	98%	97%	97%	96%	98%	98%
% with one or more multimedia-equipped computers	93%	95%	92%	93%	94%	91%	93%	93%	94%
% with one or more multimedia-equipped computers connected to Internet	91%	93%	94%	93%	93%	85%	90%	90%	92%
% with one or more multimedia-equipped and Internet-connected computers and access to a printer, and a dedicated projection device	63%	32%	43%	37%	36%	31%	48%	14%	35%

Summary of technology table for rooms: Over 93% of instructional rooms, LMCs, and offices have Internet access, and over 91% of all rooms including offices and grades 6-8) have at least one multimedia computer connected to the Internet. Administrative offices, library centers, and instructional rooms in career centers are more likely to have telephones than in other instructional rooms. Computer labs and library centers are more likely to have a complete teacher workstation than other instructional rooms and offices. Teacher workstations appear in grades 3-5 more often than in other grades, averaging 43% compared to 36% in high school and 32% in grades PreK-2 and 37% in grades 6-8.

5. Estimated typical (average) timeframe for resolving minor or routine technical problems/repairs.

Repair Timeframe	# Buildings	% Buildings
1 working day	942	42%
2-3 working days	1,016	46%
4-6 working days	162	7%
7-10 working days	63	3%
11 working days or more	26	1%

Summary: Over 1,900 buildings (88%) report having routine technical problems solved in three or fewer days.

6. Estimated percentage of computers in working order on a typical (average) day Median = 98%.

INTERNET CONNECTIVITY – DISTANCE LEARNING

1. School building Internet connection by bandwidth and delivery mode.

Bandwidth	# Buildings	% Buildings	Delivery Mode	# Buildings	% Buildings
56kb – 384 kb	16	1%	Copper line	655	30%
385kb – 1.5mb (T1)	306	14%	Fiber	1,265	57%
1.6mb – 9.9mb	1,156	52%	DSL	82	4%
10mb – 45mb	305	14%	Satellite	8	<1%
45mb – 100mb	227	10%	Other:	168	8%
>100mb	191	9%	None	30	1%
None	6	<1%			

Summary: Nearly all buildings (98%) report having a partial T1 or higher Internet connection, with most connections delivered via fiber or copper wire. Over two in five buildings (80%) have connections greater than T1. 32% of buildings increased their connectivity from T1 to the 1.6 mb – 9.9 mb range in the past year, due to increased numbers of computers being installed, and the increasing use of the internet for research and instructional materials.

2. Estimated percentage of computers connected to school building LAN (or district WAN) Median = 100%

3. Distance learning system(s) available to students in school building. (Check ALL that apply)

Distance Learning System	# Buildings	% Buildings
I-TV: two-way interactive (audio and video) television	419	19%
Desktop video conferencing: two-way interactive	307	14%
Web-based online instruction via Internet: non-interactive	945	43%
Satellite: one-way instructional video	351	16%
Cable TV: one-way instructional video	1,175	53%
Other	167	8%
None	483	22%

SCHOOL Building Level Census Form

Internet Connected – Distance Learning (continued)

Summary: The most prevalent distance learning systems include cable TV (53% of buildings) and online instruction (43% of buildings). Fewer than one-fifth of buildings have two-way interactive television. The slight rise (2%) in two-way interactive videoconferencing points to the developing availability of interactive videoconferencing software and hardware for the desktop. The rise (7%) in Web-based online instruction via Internet: non-interactive follows the rising availability of video and instruction on the Internet.

TECHNOLOGY USAGE

1. Estimated percentage of administrators, teachers, and students routinely using following applications.

	Routine Users		
Application	Administrators	Teachers	Students
Educational Software	47%	79%	80%
Email	98%	96%	13%
Electronic Resources:			
EBSCO host	17%	24%	23%
Electronic encyclopedia	16%	32%	36%
Newsbank	8%	12%	11%

2. Estimated percentage of administrators, teachers, and students routinely using computers for following functions.

	Routine Users		
Function	Administrators	Teachers	Students
Produce media, web, or multimedia products to demonstrate learning, make presentations	61%	59%	46%
Produce written or print products to demonstrate learning, make presentations	82%	82%	61%
Communicate with peers, experts, others	95%	90%	24%
Communicate with parents and students	86%	78%	24%
Conduct online research	82%	77%	58%
Participate in online courses (this year)	12%	14%	4%
Manage student records (spreadsheet/database)	87%	81%	-
Track student performance	85%	82%	-
Assess student performance	76%	78%	-
Deliver and present instruction	41%	67%	-
Prepare lesson plan(s)	14%	71%	-

Summary: Nearly all administrators (95%) and teachers (90%) use email to communicate routinely with peers and experts. Four in five administrators and teachers use word processing to produce written/print products. About three in four teachers use technology routinely to conduct online research, manage student records and track student performance. Students are more likely to use technology routinely to produce written/print products and conduct research. Few administrators, teachers, or students participate in online courses.

3. Estimated total FTE of staff or total hours of others directly responsible for integration of technology into curriculum and instruction. Overall Averages: 2.1 FTE (3.35 including teachers) 49 Contract hours

Employee Type	# Buildings	% Buildings
Instructional tech. specialist	820	37%
Library/media specialist	1,355	61%
School administrator	1,103	50%
Teacher	1,155	52%
School technical staff	393	18%
District technical staff	986	44%
Other	205	9%
None	205	

Non-Employee Type	# Buildings	% Buildings
Students	48	2%
Regional center/RPDC	96	4%
Other (specify)	80	4%
None	1,999	90%

Summary: Nearly all buildings (95%) provide instructional technology support, relying most on library media specialists and other teachers, or school administrators (including curriculum specialists and instructional coaches) and district technical staff. About one in three buildings has a designated instructional technology specialist. Little technology integration support is provided by non-employees.

4. Estimated percentage of teaching staff fully integrating technology into curriculum and instruction. Median = 60%

SCHOOL Building Level Census Form

Technology Usage (continued)

5. School (or district) supported technology-mediated feedback. (Check ALL that apply)

System	# Buildings	% Buildings
Automated absentee calling system	511	23%
Electronic bulletin board	457	21%
Email	2,110	95%
Homework hotline via web	353	16%
Homework hotline via telephone	277	12%
Listservs	396	18%
Voice Mail	1,265	57%
Other (specify):	562	25%
None	57	3%

Summary: Nearly all buildings (98%) report using technology to facilitate feedback and interaction between school staff and patrons. The most used technology-mediated systems include email (95%) and voice mail (57%).

Due to the rise in the number and types of technology services and resources available to the general public, school patrons are becoming more equipped to access and utilize technology-mediated feedback. As their patrons' access grows, schools are adopting a variety of services to connect with their patrons. The list of opportunities for schools to connect with their patrons includes a variety of specific companies and service providers; however, for this report we have grouped them into categories instead of listing them by product name.

"Other" now includes these types of technology-mediated feedback sources:

	# Buildings
Automated records systems that allow parents to check grades and other information	213
Course management systems (such as Moodle and Blackboard) that provides students and parents access to homework assignments, class resources and grades	43
Automated outdial systems that notify parents of school events, i.e., early closings, etc.	35
Digital newsletters, websites with interactive and/or survey features	35

This year, "other" also includes a small number of school intranets that provide services such as online security camera feeds and building and/or district work orders to district staff.

Cross Reference of COT Items and 2002-06 METSP Goals and Objectives by METSP Goal

METSP Goal and Objective	COT Item
1. Student Learning	
a. State Board endorses/adopts student technology standards	NA
b. Districts establish/endorse student technology standards	District 2
c. Students will be technologically literate by end of eighth grade	District 8
d. Students routinely use Web and educational software	Building 14
e. Students routinely use technology to conduct research and produce products	Building 15
f. Sample of eMINTS student will score satisfactory or above on the MAP reading test	NA
g. 5% fewer of eMINTS sample students will score in Step 1 or Progressing on the MAP annually	NA
h. eMINTS sample students in special categories will perform better, on average, on the MAP than non-eMINTS students	NA
i. High schools will provide courses via distance learning	NA
2. Teacher Preparation	
a. State Board establishes or endorses teacher technology standards	NA
b. Districts establish/endorse teacher technology standards	District 2
c. Districts integrate technology into the core curriculum areas	District 6
d. Teachers possess intermediate or advanced technology skills	Building 2
e. Teachers routinely use Web and educational software	Building 14
f. Teachers routinely use technology to conduct research, prepare lessons, assess and manage student data, produce presentations and deliver instruction	Building 15
g. Teachers fully integrate technology in curriculum and instruction	Building 17
h. Elementary buildings will have at least 2 eMINTS trained teachers	Building 4
3. Administration/Management	
a. State Board establishes or endorses administrator technology standards	NA
*Districts establish/endorse administrator technology standards <Added 2003>	District 2
b. Districts have state-approved technology plans, tied to CSIPs, address all TFAs, promote PD, and make use of E-rate	District 1, 10, 11
c. Districts partner with business / higher education to help with technology planning, implementation or evaluation	Deleted 2005
d. Building administrators possess intermediate or advanced technology skills	Building 2
e. Districts provide email accounts to administrators, teachers, and support staff	District 7 & 4
f. Building administrators routinely use Web and education software	Building 14 & 15
g. Principals routinely use technology for data management, assess and track student performance, communicate with others	Building 15
h. Buildings have technology- mediated feedback system(s)	Building 18
4. Equitable Access	
a. Districts maintain adequate LAN, connected to Internet	District 5
b. Buildings are connected to district LAN/WAN, connected to Internet, providing web and email services	District 5
c. Buildings have video conferencing and/or multimedia distribution system	Building 13
d. Classrooms are equipped with full teacher workstations and Internet-connected computers at 2:1 ratio of computers to students	Building 5, 6, 8
5. Technical Support	
a. Districts employ/contract technical staff	District 3
b. Buildings have on-site technical support (both technical and instructional)	Building 5, 16
*Buildings have technical problems/repairs fixed in 3 working days <added 2004>	Building 10,

Appendix B

Cross Reference of COT Items and 2002-06 METSP Goals and Objectives, by COT Item

District Census	METSP Goal
1. Year technology plan approved by state	3.a.
2. Board-approved education technology standards, by kind and population	1.b., 2.b.
3. District staff responsible for technical maintenance and support	5.a.
4. District-supported administrative systems	3.e.
5. District building(s) and administrative office(s) networking	4.b.
6. Core curriculum areas where technology is integrated	2.c.
7. District-provided email accounts, by user type and [student] grade levels	3.c.
8. Percent eighth-graders technologically literate	1.c.
9. Technology budget for current year	3.b.
10. E-rate discount amount for current year	3.b.
11. Percent E-rate discount budgeted back into education technology	3.b.

School Building Census	METSP Goal
Technology Planning	
1. Building technology plan status (stand-alone or part of district plan)	NA
Technology Professional Development	
2. Technology skill levels of building administrators, faculty, technical, and support staff	2.d., 3.d.
3. Number of teachers receiving education technology-related professional development (including eMINTS training)	2.a.-d.
4. Number eMINTS-trained teachers	2.h.
Hardware And Support	
5. Building-level staff responsible for technical maintenance	5.b.
6. Number computers in building, by type and location	4.d.
7. Number Internet-connected computers multimedia-equipped computers by type of computer and type of connection	4.d.
8. Equipment located in instructional rooms, by type of equipment and room	4.d.
9. Typical timeframe for resolving routine/minor technical problems and repairs	5.b.
10. Percent computers in working order on a typical day	5.b.
Internet Connectivity / Distance Learning	
11. Internet connection bandwidth	4.a.
12. Percent computers connected to building and/or district network	4.b.
13. Distance learning system(s) available in building	1.i.
Technology Usage	
14. Percent administrators, teachers and students routinely using education technologies	1.d., 2.e., 3.f.
15. Percent administrators, teachers, and students routinely using technology functions	1.e., 2.f., 3.g.
16. Building-level staff responsible for leadership in integrating technology into curriculum	2.c., 5.b.
17. Percent of teaching staff fully integrating technology into curriculum and instruction	2.c., 2.g.
18. Technology-mediated feedback system used in the building (or via district)	3.h.